SYSTEM SAFETY DESIGN VERIFICATION CHECKLIST
(CECOM Supplement 1 to AR 385-16)

Applicability

This checklist is used to verify the safety of systems design. It is **mandatory** for use in Development Acceptance and First Article tests and in validating Safety Assessment Reports. This checklist must be completed prior to issuing a Safety Suitability for Release statement.

INSTRUCTIONS

(1) Enter the information requested on Page 2.

(2) Review available safety data, to include contract Statement of Work, hazard analysis reports, System Safety Management Plan, System Safety Program Plan, Safety Assessment Reports, and test reports.

(3) Select the sections of this checklist that apply to the item to be inspected:

Sections 1-4: Systems and Equipments,

Section 5: Antennas and Masts,

Section 6: Vehicles, Shelters, Trailers, and Vans.

Section 7: Health Hazards

(4) Review each question and eliminate those that do not apply by marking **NA** (not applicable) in the Conformance block.

(5) Evaluate each applicable question and record conformance or non-conformance by a **Y** (yes) or **N** (no), respectively.

(6) Describe each non-conformance with action necessary to bring into conformance, action POC and estimated date of completion.

(7) Submit completed checklist and Non-Conformance Reports to STRICOM Safety, ATTN: AMSTI-EO, 12350 Research Parkway, Orlando, FL 32826-3276.

(8) This checklist was developed by the U.S. Army CECOM Safety Office.

Identification of Inspected Item

Name and Nomenclature _____

National Stock Number (NSN) ____-____-____

Serial Number _____

Contract Number _____

Contractor _____

Government Procurement Specification:

Number _____ Date _____

Model Designation (Check one):

Advanced Development [ ] Production [ ]

Engineering Development [ ] Market Sample [ ]

Other (specify) _____

Software Designation:
Version No. _____ Language _____
Version type: [ ] Baseline; [ ] Update; [ ] Enhancement

- -

Date of Inspection _____
Place of Inspection _____
Inspector _____ Office Symbol _____

Telephone: DSN _____

Commercial _____

DESIGN VERIFICATION CHECKLIST

Section	Subject Area
1	Electrical Safety
2	Mechanical Safety
3	Radiation Safety
4	Other Safety (including Software)
5	Antennas and Masts
6	Vehicles, Shelters, Trailers, and Vans
7	Health Hazards

	Conform	Remarks
Section 1: **Electrical Safety** 1.1 Are operating personnel protected from accide		
1.2 Does each contact, terminal or like device, hav personnel if exposed during maintenance?		
1.3 Are the barriers/guards applicable to question		
1.4 If the answer to question 1.2 is **NO**, is a bypass		
1.5 Does the interlock that is detailed in question 1		
1.6 Are enclosures, barriers and/or guards that pro		
1.7 Are transmitter output terminals, antennas, etc		
1.8 Are portions of assemblies operating at potenti interlocks?		
1.9 Are enclosures for potentials, which exceed 50		
1.10 Are all terminals, conductors, etc., capable of etc., through the use of barriers, spacings, and labe		
1.11 Do all circuits (+500 V) and capacitors (+30 V		
1.12 If the answer to question 1.11 is **NO**, are the		
1.13 If resistors are used to discharge capacitors c		
1.14 Are all test points, required to be measured b		
1.15 Are test points that are accessible through ho		
1.16 Are the test point voltages to be encountered		
1.17 If voltage dividers are used to reduce test poi		
1.18 Is proper color coding provided for indicators		
1.19 Is sufficient space provided between cable sh		
1.20 Have connectors, used in multiple electric circ		
1.21 Has the use of similar configuration connecto		
1.22 Are plugs and receptacles coded and marked		

15 Jul 94 (Replaces SEL Form 1183, 1 Jun 92, which is obsolete.)

	Conform	Remarks
1.23 Are plugs and receptacles designed to preclu		
1.24 Are male plugs de-energized when disconnec		
1.25 Are dissimilar plug/receptacle pairs used in u		
1.26 Are all receptacles marked with their voltage,		
1.27 Do probes that are part of or accessories to t inches? (This question does not apply if the voltag		
1.28 Are single-phase insulated power conductors		
1.29 Are three-phase power conductors coded as		
1.30 Are DC power conductors color coded red for		
1.31 Are insulated ground wires color coded green		
1.32 Are all external parts, surfaces, and shields a except for RF energy on their surfaces?		
1.33 Does self powered equipment have all extern		
1.34 Do cables that carry a grounded conductor (n		
1.35 Is the path from various equipment points to g		
1.36 Does the ground have capacity to safely conc		
1.37 Is the impedance of the path from the equipm		
1.38 Does the path from the equipment tie point to		
1.39 Are panels and doors containing meters, circu		
1.40 Is the ground wire separate from electrical cir		
1.41 Are grounded, dead metal parts, ground wires		
1.42 Where Uninterruptible Power Supplies (UPS) secondary backup source (to provide ground fault s		
1.43 If a neutral-ground bond point is provided at t		
1.44 Do equipment (as well as equipment systems input voltage/frequency (3.5 mA if the system can b		
1.45 If the answer to question 1.44 is **NO**, are redu		

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1.46 Has a test been conducted to determine the a		
1.47 Is the ground connection to the chassis or fra		
1.48 On transmitting equipment, is a grounding stu		
1.49 Is a ground stud provided on equipment inten		
1.50 Do power attachment plugs automatically gro		
1.51 When the grounded power plug is mated with		
1.52 Are wires and cables supported and terminate		
1.53 Is a means provided so that power can be cut		
1.54 If a main power switch is provided, does it cut		
1.55 Is the switch located on the front panel and cl		
1.56 Is physical protection provided from accidenta		
1.57 Are power switches selected and located suc		
1.58 Are switches provided to deactivate mechanic		
1.59 Is potentially hazardous equipment (RF, mech		
1.60 Are emergency controls readily accessible an		
1.61 Are battle short interlocks provided with an in		
1.62 Is equipment that is designed to have multiple incorrect input power/voltage levels?		
1.63 Are overcurrent and/or overload protective de		
1.64 If overcurrent protective devices are provided circuit?		
1.65 Are multi-pole circuit breakers provided for m		
1.66 If circuit breakers are used to power up/down		
1.67 Do circuit breakers provide a visual indication		

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1.68 Where fuses are used, are extra fuses suppli		
1.69 Can fuses be removed safely (no exposed liv		
1.70 Are fuse replacement types and ratings labele		

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	Conform	Remarks
Section 2: **Mechanical Safety** 2.1 Is the equipment designed to provide personne		
2.2 Are "no step" markings provided at necessary		
2.3 Are snag hazards prevented from exposed gea		
2.4 Are telescoping ladders and assemblies provid		
2.5 Are self-locking or other fail-safe devices incor collapsing or falling?		
2.6 Is the weight bearing capacity of stands, hoists		
2.7 Are positive means provided to prevent misma		
2.8 Are doors and drawers and associated hinges,		
2.9 Are doors and hinged covers rounded and prov		
2.10 Are sharp corners, edges, and projections av		
2.11 Is the installed equipment free of overhanging		
2.12 Is the equipment likely to remain upright unde		
2.13 Does the weight of equipment that is designe Weight (lbs) Handling Function M&F M Equipment designed to be lifted from the floor to five feet or less above the floor. 37 56		
Equipment designed to be lifted from the floor to three feet or less above the floor 44 87		
Equipment designed to be carried 33 feet or less. 42 82 M&F - Male and female population M - Male population only		
2.14 Does the weight distribution allow easy handli		
2.15 Are suitable carrying handles or hand grasp a		
2.16 Are lifting requirements labeled on equipment		

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	Conform	Remarks
2.17 Is the temperature of all exposed parts less th		
2.18 Is the temperature of front panels and operati		
2.19 Are pressurized systems or components prov		
2.20 Are battery compartments vented?		
2.21 Is the battery compartment designed to preve		
2.22 Can battery boxes intended to be operated wi		
2.23 Is all glass of the non- shatterable type?		
2.24 Are the outer coverings of cables, wires, and		
2.25 If maintenance access is required to glass fib		

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	Conform	Remarks
Section 3: **Radiation Safety** 3.1 Are warning labels provided that indicate the h Frequency (f) Power Density MHz mW/cm^2 0.01 - 3 100 3 - 30 $900/f^2$ 30 - 100 1 100 - 1,000 100 1,000 - 300,000 10		
3.2 For transmitting equipment, where antennas ca body for conditions of grasping the dead metal obje		
3.3 Have all devices that exceed 10,000 volts beer		
3.4 Are X-ray producing devices shielded to reduc		
3.5 Are X-ray producing devices and the compone		
3.6 Has the use of radioactive material in the manu		
3.7 If the answer to question 3.6 is **NO**, has approv		
3.8 If the answer to question 3.6 is **NO**, does the m		
3.9 Are all tubes, knobs, meters, dials, scales, mar **NO**, indicate isotope and quantity on SEL Form 118		
3.10 Are radiation markings and labels affixed to a		
3.11 Are filters, goggles, or other protective device laser, and any other type of hazardous radiant ener		
3.12 If lasers are used, has output power been lim		
3.13 Are warning labels affixed near the beam exit		
3.14 Do lasers conform to the Code of Federal Re		
3.15 Has a military exemption been approved throu		
3.16 Do exempt laser systems comply with MIL-ST		
3.17 Are exempt laser systems provided with a pe		

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	Conform	Remarks
Section 4: **Other Safety** 4.1 Is the system designed to preclude injury or eq		
4.2 Are there provisions to prevent injury from impl		
4.3 Is equipment designed to prevent accidental ig combustible dusts, or ignitable fibers and flyings.)		
4.4 Is an audible/visual warning device provided to		
4.5 Is there adequate separation between critical w		
4.6 Are audible warning signals distinguishable fro		
4.7 Is the display lighting of aircraft electronics (avi		
4.8 Have all equipment related mechanical, electri		
4.9 Do warning labels comply to the marking, desig		
4.10 Are warning labels capable of lasting for the r		
4.11 Are guards, covers, and barriers marked to in		
4.12 When possible, are labels located such that th		
4.13 Do TMs suitably address all equipment assoc		
Questions 4.14 through 4.22 pertain to syste components. 4.14 Is the system or equipment free of software th rely in order to make safe decisions? If **YES**, then		
4.15 Does the software adequately control all haza		
4.16 Does the software allow the operator to take c		
4.17 Does the software allow the operator to take c		
4.18 Will operator have information needed in orde		
4.19 Is the probability that the software will fail to p		
4.20 Is the probability that the software will induce		
4.21 Can the failure of any input or output device c		
4.22 Does the system assume or revert to a safe s		

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	Conform	Remarks
Section 5: **Antennas and Masts** 5.1 Are antenna terminals insulated to prevent RF		
5.2 Are antenna tips designed to prevent puncture		
5.3 Are labels provided to warn against contact wit		
5.4 Where design permits, are antennas provided		
5.5 Are lock-out devices provided for remotely-ope		
5.6 Are winches, collapsible parts, tensioners, and guy cable?		
5.7 If the answer to question 5.6 is **YES**, are the sa		
5.8 For masts greater than 45 feet in height, is a m		
5.9 Is a means provided to ensure that the mast is		
5.10 Are tripping and "clothes- hanger" hazards du		
5.11 Are alternative methods of recovering the ma		
5.12 Are stakes suitably sized to prevent pull-out ir		
5.13 Are tripods designed so that adjustments can		
Questions 5.14 through 5.25 pertain to Lightning Protection Adequacy. Note: if the mast is electrically continuous, treat it as the down conductor. 5.14 If antenna acts as an aerial terminal, does co		
5.15 If the answer to question 5.14 is **NO** (e.g. dish		
5.16 Is down conductor equivalent to #3 AWG soli		
5.17 Are joints mechanically strong & corrosion res		
5.18 Are resistance of joints less than that of 2 ft.(.		
5.19 Will the down conductor remain free of bends		

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	Conform	Remarks
5.20 Is down conductor straight as possible with ar		
5.21 Is ground rod at least 1/2 inch in diameter, 8 f		
5.22 Is ground rod free of paint?		
5.23 Does antenna mast configuration during erec		
5.24 If mast is electrically continuous and is acting		
5.25 Is a safety tip cap provided for the air termina		

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	Conform	Remarks
Section 6: Vehicles, Shelters, Trailers, and ns 6.1 Is the vehicle weight properly distributed and is		
6.2 Does the shelter/equipment center of gravity (C		
6.3 Is the center of gravity and equipment weight d		
6.4 Does the system weight (including crew gear a		
6.5 Has the vehicle satisfactorily passed road wort		
6.6 Have no vehicle speed restrictions been placed		
6.7 Are adequate instructions provided for placeme		
6.8 Are safety chains provided to prevent the traile		
6.9 Will the lifting rings support the total weight of t		
6.10 Are entries and exits free of obstructions?		
6.11 Do the entryway ladders or steps allow safe e		
6.12 Is an emergency exit provided and marked?		
6.13 Is the emergency exit readily accessible and s		
6.14 Where extended operations are required on t		
6.15 Does the floor surface prevent slipping?		
6.16 Are wall, floor, and ceiling fastenings sufficien		
6.17 Are accessories secured or stowed to preven		
6.18 Is equipment that is designed to have multiple incorrect input power/voltage levels?		

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	Conform	Remarks
6.19 Is an Army approved earth grounding system		
6.20 Is a ground stud provided at the power entry b		
6.21 Is the ground stud identified by a label or othe		
6.22 Are no parts of the vehicle/shelter enclosure c		
6.23 Are the ground pins of the convenience outlet		
6.24 Is lightning surge protection provided at the p		
6.25 Are all outdoor receptacles connected to grou		
6.26 If the answer to question 6.25 is **NO**, is the sc applications or as a convenience outlet?		
6.27 Has the amount of residual leakage current to circuit)? If **YES**, indicate the amount of current that was mea		
6.28 Is a main power switch provided at the shelte		
6.29 Are safety switches provided at remotely-loca		
6.30 Are terminals, plugs, and other exposed parts maintenance?		
6.31 Where transmitting equipment exists, and roc		
6.32 Are fuel lines that are inside the shelter made		
6.33 Is there a heater fuel shut-off valve inside the		
6.34 Is a fuel line and jerry can adapter provided fo		
6.35 Are fuel lines and fuel sources suitably protec		
6.36 Are battery compartments designed to prever		

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	Conform	Remarks
6.37 Is a warning device provided to indicate when		
6.38 Is the vehicle exhaust sufficiently separated fr		
6.39 Are ceilings, walls, and other surfaces adjace		
6.40 If the answer to question 6.39 is **NO**, do such		

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Section 7: **Health Hazards** 7.1 Are noise levels less than 85 dBA for steady st		
7.2 Have noise levels been reduced to the lowest p		
7.3 Are appropriate safeguards and/or warnings pr		
7.4 If generators are used, is the generator noise l		
7.5 If headsets, handsets, earphones, etc., are rec manuals?		
7.6 Is the equipment (during operation, maintenan reactives, explosives, oxidizers, carcinogens)? If y		
7.7 Has AMSEL Form 1164 or equivalent been co		
7.8 Have non-hazardous substitute materials been		
7.9 Are potential exposures to hazardous materials American Conference Of Governmental Industrial H engineering controls, protective equipment, and/or		
7.10 Is the release of toxic, corrosive, or explosive		
7.11 Has the use of mercury been avoided?		
7.12 Is the equipment free of advanced composite		
7.13 Are personnel not required to occupy the she		

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7.14 Is an environmental control unit provided and		
7.15 Do shelter air temperatures at the floor level a		
7.16 Is adequate ventilation provided within the sh		
7.17 Is adequate illumination provided in all areas?		
7.18 Are personnel not required to be in or near ve is **NO**, answer questions 7.19 and 7.20.		
7.19 Has air sampling been conducted to determin		
7.20 Are diesel exhaust levels within the shelter or Substance — 8 Hr TWA — STEL Carbon Monoxide — 25 — N/A Formaldehyde — 0.75 — 2 Sulfur Dioxide — 2 — 5 Acrolein — 0.1 — 0.3 Nitric Oxide — 25 — N/A Nitrogen Dioxide — 3 — 5		
7.21 Is the system free of insulating materials (e.g. safeguards provided on the equipment and in the te		
7.22 Is the equipment free from ozone-depleting s		
7.23 Have alternate substances been used as muc		
7.24 Are appropriate warnings and/or safeguards p		
7.25 Is the system/equipment free of batteries? If		
7.26 Identify the battery type, chemistry, and wheth		
7.27 Is the battery in the Government inventory? I		
7.28 Is a portable fire extinguisher provided? If **YE**		

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7.29 Is a type B:C Carbon Dioxide or Dry Chemica		
7.30 Is a type B:C Dry Chemical extinguisher provi		
7.31 Is a fixed type fire suppression system provid		
7.32 Is an audible or visual alarm activated prior to		
7.33 Is there a time delay prior to release of the fir		
7.34 Have the ergonomic effects associated with t		
7.35 Is the system free of all other health related h		

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